



PATIENT

Lucy Barry

SPECIES

Canine

BREED

Goldendoodle

SEX

Female Spayed

AGE

5.27.14

WEIGHT

77lbs

INTERPRETED BY

Maggie Machen Lamy,
DVM, DACVIM
(Cardiology)

HOSPITAL NAME

Chadwell Animal
Hospital

REFERRING VET

Dr. Oliveri

INVOICE

24562

DATE

6.3.22

PRESENTING CLINICAL SIGNS

History: Seen at ER 5/26/22 for coughing. lethargy. Dx with anemia, questionable abd rads. Owner declined treatment was told to bring to regular vet directly. 5/31/22 ER "follow up" exam. No longer coughing but still lethargic and not eating. Blood work similar to ER results (anemia) but albumin 1.9. Declined rads. Recommended further testing. Scheduled Bile acid, Cpli, fecal and UA/UPC for following day. All NR. Recommend abd US.
 -Pertinent abnormal PE/Chem/CBC/UA Results: BUN: 32.8, Creat: 1.8.
 -Current medications: Cerenia 60mg QD for 4 days started 6/1/22.
 -Sedation used: Not required to complete full diagnostic ultrasound.
 -Pertinent previous ultrasound results: No previous.
 -STAT: Approved/Requested.
 -Imaging performed by: Stephanie Pearce RDCS, RVT.

ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available at both 25 and 50mm/s; 5mm/mV. The average heart rate is 220bpm (range 166-300bpm). No identifiable P waves with an irregularly irregular rhythm. No ventricular arrhythmias observed.
 ECG diagnosis: Rapid atrial fibrillation.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Severe left ventricular dilation with increased sphericity and decreased systolic function, EPSS increased. Moderate left atrial enlargement. The mitral valve appears mildly thickened, with no obvious prolapse into the left atrial lumen. Moderate to severe eccentric mitral regurgitation secondary to annular stretch. Decreased LV wall thickness. The tricuspid valve appears normal in form and function. Moderate right atrial and ventricular dilation. Mild central tricuspid regurgitation secondary to annular stretch. Normal velocity. The aortic valve is normal in morphology and mobility. No subvalvular ridge present; normal LVOT velocity. Mild aortic insufficiency. Normal pulmonic valve with no pulmonic insufficiency seen. No pericardial or pleural effusion noted. No obvious cardiac tumors. Rapid irregular HR/rhythm throughout.

CARDIAC CHART

CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (Boon method)	LA/AO (Heart Base; Swe)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT	4.4	2.2	NM	2.2	12	25	NM
CANINE CARDIAC PARAMETERS	HR (BPM)	AV VMAX (m/s)	PV MAX (m/s)	BODY WEIGHT (kg)	LA 2D short axis Base view (cm)	LVIDd Avg; 2D and m-mode short axis (cm)	LVIDs Avg; 2D and m-mode short axis (cm)
NORMAL PARAMETER	50-100	0.7-1.7	0.7-1.6	BELOW	BELOW	BELOW	BELOW
PATIENT	190	0.94	0.5	34.9	4.5	5.3	4.7
*Normal chamber parameters expressed as a mean value (SD)				3	1.27 (5.3)	2.46 (2.46)	1.36 (5.5)
BODY WEIGHT DEPENDENT PARAMETERS				5	1.40 (4.5)	2.74 (5.2)	1.60 (4.7)
<i>*Note: All measurements based upon multi-modal images and methods. An average value is reported.</i>				10	1.50 (3.8)	3.27 (3.5)	2.06 (3.1)
				15	1.83 (2.0)	3.71 (2.4)	2.43 (2.1)
				20	2.02 (1.9)	4.14 (2.2)	2.80 (2.0)
				25	2.18 (2.4)	4.48 (2.9)	3.10 (2.5)
				30	2.33 (3.3)	4.83 (3.9)	3.39 (3.4)
				35	2.48 (4.3)	5.17 (5.0)	3.69 (4.5)
				40	2.62 (5.2)	5.48 (6.1)	3.96 (5.4)

Adapted from June Boon, Veterinary Echocardiography, 1998
 Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435
 Hansson et al, Vet Rad and Ultrasound 2002
 Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Unfortunately, this patient has end-stage cardiomyopathy and severe systolic dysfunction. This is causing dilation and overload of all 4 chambers resulting in insufficiency of the mitral and tricuspid valve. The degree of dilation and pump failure has resulted in development of an arrhythmia- atrial fibrillation (AF)- which is likely what led to recent decline. AF is characterized by disorganized contractions of the atria leading to an irregular heart rhythm. The irregular heart rhythm rarely causes clinical signs in dogs. However, atrial fibrillation also usually causes an increase in the heart rate, and this can lead to clinical signs and biventricular CHF (tachycardia-induced cardiomyopathy results in right-sided congestion). These findings are not expected to be related to anemia or hematologic abnormalities. Recommend reassess once the patient is stabilized.

Systolic failure can be primary in nature (DCM) or secondary to taurine deficiency, myocarditis, tachycardia-induced cardiomyopathy, or infiltrative disease such as lymphoma. In a relatively young dog (relatively uncommon signalment for DCM), consider testing for primary causes that may be treatable. A troponin (cTnI) level can be submitted to further investigate infiltrative/inflammatory contribution (myocarditis). Additionally, a taurine level may be helpful (screen for malabsorption issue) with careful attention to diet history. In light of recent FDA reports, a thorough diet history is recommended with avoidance of BEG options. Finally, further systemic evaluation for underlying infiltrative contribution such as neoplasia is also reasonable although often low yield.

Regardless of cause, prognosis is guarded to poor at this stage in the disease process, with an average survival time of <6 months. Dogs with DCM and AF are at high risk for complications such as recurrent congestive heart failure, malignant arrhythmias and sudden death. The only treatable cause of systolic failure is taurine deficiency. If a taurine level is declined, it is also reasonable to simply supplement with taurine on the off chance of a malabsorption issue.

Given that clinical signs have been ongoing, consider referral to a 24-hour facility with specialty care to hopefully give this patient the best possible outcome as IV rate control may be indicated. Close monitoring of ECG, BP, respiratory rate/effort, etc. are recommended in the acute phase. Alternatively, oral diltiazem should be instituted ASAP to hopefully lower heart rate and improve cardiac output.

Goals of therapy include correcting water retention, improving myocardial contractility, afterload reduction, and heart rate control. It is important to note that dogs in AF typically do not convert back to sinus rhythm, however they can do quite well in AF if the heart rate is controlled.

Once stabilized, monitor at home for cough, lethargy, inappetence, collapse/fainting episodes or increase in respiratory rate or effort. Monitoring of sleeping breathing rates is recommended to screen for recurrent CHF at home. Moderate activity restriction is advised. Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit.

PLAN

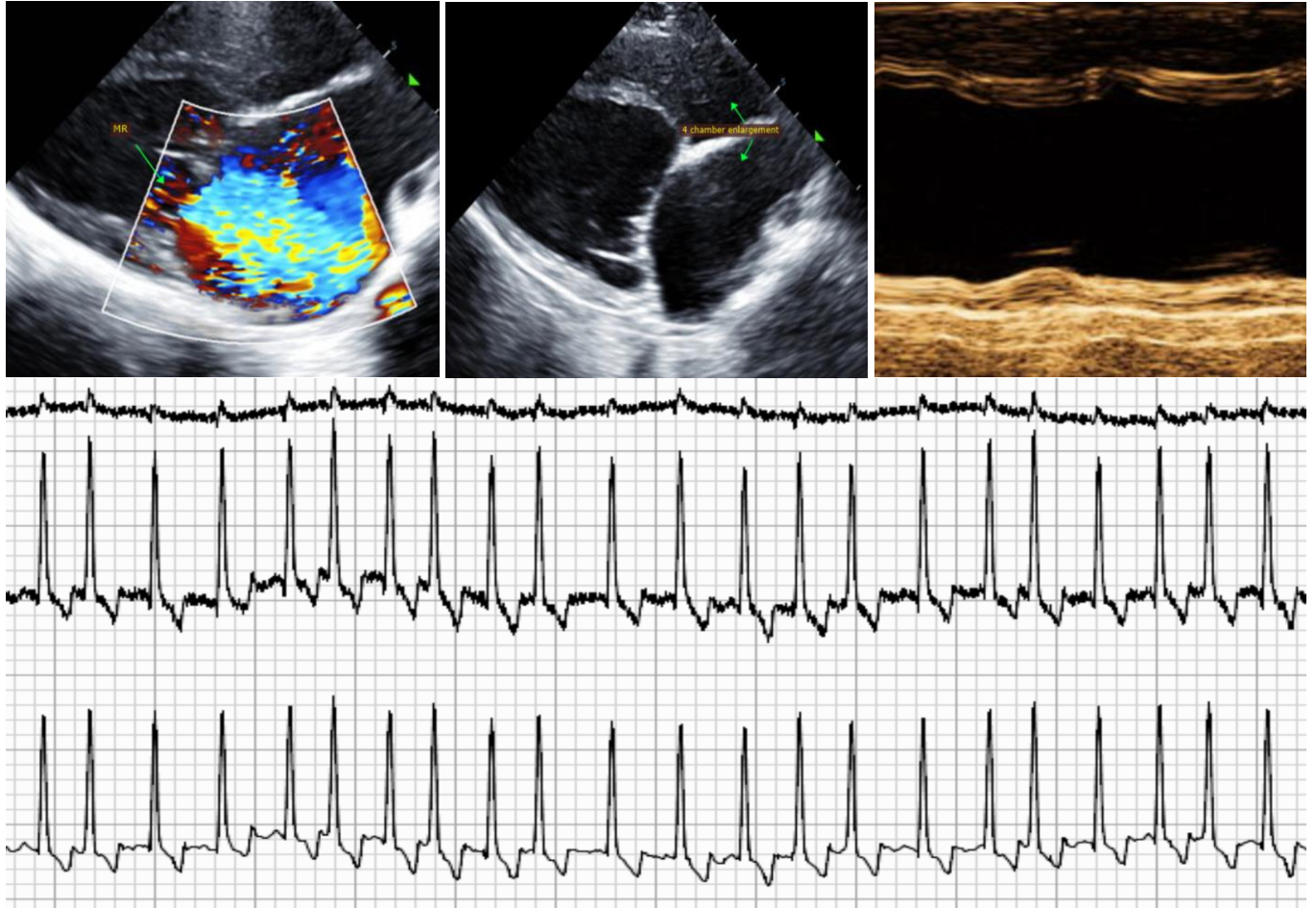
Consider hospitalize for rate control. Screening BP. Institute diltiazem 1-2mg/kg PO q8h. Administer furosemide 1-2mg/kg PO q12h. Institute Spironolactone 1-2mg/kg PO q12 hours. Institute Pimobendan 0.3mg/kg PO q12h.

Consider taurine supplement 1000mg PO q8-12h. Consider further testing if desired as discussed. Diet history strongly recommended.

Recheck renal panel/BP/HR in 5-7 days to assess response to medications. Target stressed heart rate with AF is 140-160bpm. Up-titrate diltiazem and/or add digoxin if poorly controlled. Reassess HR/BP and renal panel every 3-4 months lifelong.

A recheck echocardiogram is recommended in 3-4 months, sooner if clinical signs arise in the interim.

IMAGES



The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. This report was generated using transcription software, and minor dictation errors may be present. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance, please contact me.

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